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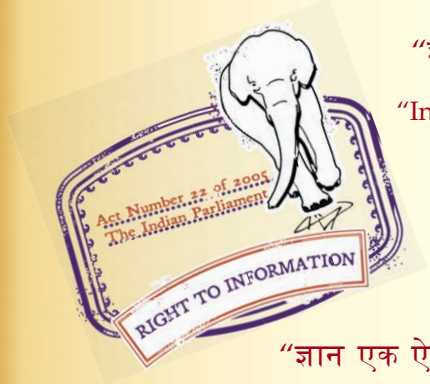

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IS : 8680 - 1978
(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR ENGINEERS' DRAWING INSTRUMENTS, COMPASS, BOW PEN, DOUBLE KNEE JOINTED WITH SECTOR HEAD JOINTS

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INDIAN STANDARDS INSTITUTION
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Price Rs 5·00

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Indian Standard

SPECIFICATION FOR ENGINEERS' DRAWING INSTRUMENTS, COMPASS, BOW PEN, DOUBLE KNEE JOINTED WITH SECTOR HEAD JOINTS

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Indian Standard

SPECIFICATION FOR ENGINEERS' DRAWING INSTRUMENTS, COMPASS, BOW PEN, DOUBLE KNEE JOINTED WITH SECTOR HEAD JOINTS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 18 January 1978, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Compass, bow pen, double knee jointed with sector head joints comprises of two legs, one having a needle and the other having provision of carrying pen point. The pen point is a plain nib. Both the legs are knee jointed in order to keep the points vertical while drawing large circles. A sector head is provided at the joint of the two legs.

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1. SCOPE

1.1 This standard covers the requirements of compass, bow pen, double knee jointed for use in drawing offices.

2. NOMENCLATURE

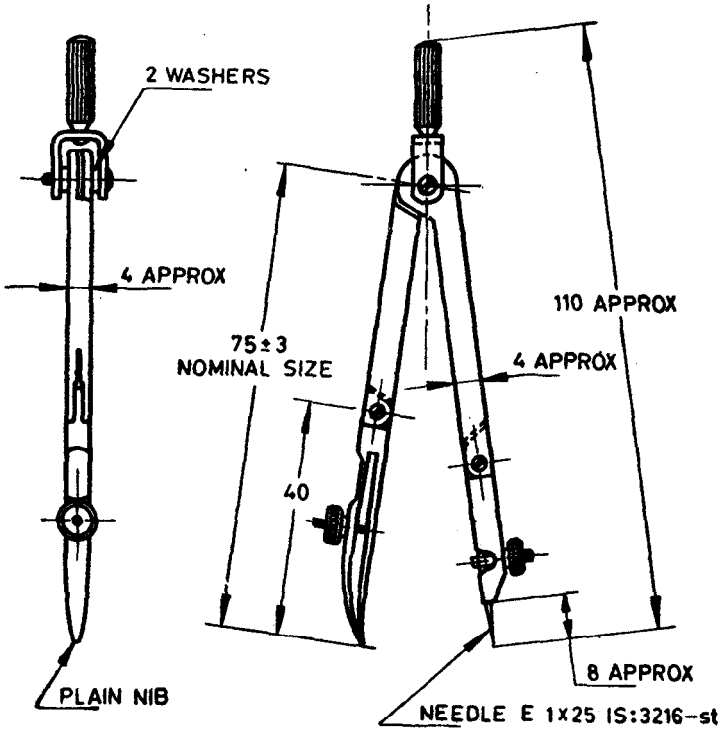
2.1 The nomenclature of different parts of the compass is shown in Fig. 1.

3. MATERIAL

3.1 The material used for the manufacture of the compass body shall be rolled, drawn or cast brass, nickel silver or stainless steel.

4. DIMENSIONS

4.1 The dimensions for compass shall be as shown in Fig. 1. The design details shall be at the discretion of the manufacturer as long as the requirements stipulated in this standard are complied with.



All dimensions in millimetres.

FIG. 1 NOMENCLATURE AND DIMENSIONS FOR COMPASS, BOW PEN, DOUBLE KNEE JOINTED WITH SECTOR HEAD JOINTS

5. GENERAL REQUIREMENTS

5.1 The joints shall be perfectly true and shall work smoothly without shake in any position. These shall be sufficiently friction tight so as to remain rigid when set at any angle and shall be entirely free from side play.

5.2 The compass shall be provided with a suitable arrangement for tightening the joints when they become loose.

5.3 The needle shall conform to type 'E' of IS : 3216-1965*. The diameter of the needle shall be 1 mm.

5.4 The drawing nib for pen point shall conform to IS : 3211-1965† and shall have a well designed ink space between the two blades and their points rounded in an elliptical form for smooth working.

5.5 Different screws used in the compass shall conform to IS : 3222 (Part I)-1966‡.

6. WORKMANSHIP AND FINISH

6.1 All unwanted sharp corners and edges shall be removed.

6.2 All engravings shall be correctly filled in with thoroughly adherent filling material.

6.3 Nickel silver and steel components shall be polished and buffed.

6.4 All brass components shall be chromium plated to grade 'B' of IS : 1068-1968§.

6.5 All bearing surfaces shall be left free from paint.

6.6 The drawing nib shall be hardened, tempered, polished and honed.

7. TESTS

7.1 Performance Test — The compass, bow pen, shall be tested for smooth functioning. It shall open and close smoothly without jerk. A suitable apparatus may be used to close and open the two legs and the force required for this purpose shall be 3 to 4 newtons. The compass shall be opened and closed for 1 000 operations. The reduction in force for opening and closing the compass shall not exceed the limits given below:

For 500 operations	50 percent, *Max*
For 1 000 operations	75 percent, *Max*

After 1 000 operations the main joints shall be reset and tested for a further 1 000 operations. In the reset the reduction in force shall not exceed the limits specified for the original setting.

7.1.1 The performance test is a destructive test and shall be conducted according to the sampling plan previously agreed to between the purchaser and the manufacturer.

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*Specification for engineers' drawing instruments, needles.
†Specification for engineers' drawing instruments, pen points.
‡Specification for instrument screws: Part I Fasteners for drawing instruments.
§Specification for electroplated coatings of nickel and chromium on iron and steel (*first revision*).

7.2 The nib of the pen point shall be so constructed that it forms a spring in itself and remains tightly pressed against the adjusting screw throughout the range of its setting.

7.3 The needle point shall be tested for convenience of fixing and removing the needles.

8. MARKING

8.1 Each compass shall be legibly and indelibly marked with the name, initials or trade-mark of the manufacturer at a suitable place on the body.

8.1.1 Each compass may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

9. PACKING

9.1 Compass, bow pen, double knee jointed, when supplied separately shall be wrapped in a tissue paper which shall be retained in position with cellophane tape. The package shall be placed in a suitable carton. The manufacturer's name or trade-mark shall be printed on the cartons.

(*Continued from page* 2)

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 0·101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2